Stakeholder Comments Summary

ENERGY STAR® for Computer Monitors
Draft 3 Version 4.0 Specification

This summary document highlights the comments received from stakeholders on the Draft 3 ENERGY STAR specification for computer monitors. EPA responses to each comment also are provided. For additional details and documentation, including Draft 3, please visit the Monitors section of the ENERGY STAR Product Development Web site at www.energystar.gov/productdevelopment.

Based on the following Test Conditions comments, EPA has decided to only revise Section 4, Test Methodology, which will be reflected in the final Version 4.0 specification. At this time, no further changes to the computer monitor specification are envisioned. Formal announcement of the revised specification will be made after the Technical Committee meeting between EPA and the European Commission.

I. Specification Changes

Test Conditions: Temperature and Humidity (Section 4)

Comment: The temperature and humidity levels provided in Draft 3, under Test Conditions, necessitate the use of special test facilities for testing computer monitors, as opposed to a standard laboratory environment.

Response: It has come to EPA's attention that the temperature and humidity levels presented in the Draft 3 (Version 4.0) specification for computer monitors may necessitate testing in special environmentally controlled test chambers, as opposed to a traditional laboratory environment. Further, the test conditions are considered abnormal for the Asia Pacific region, where the majority of computer monitor models are developed and tested. Since it is EPA's intention to minimize the burden of testing for manufacturers whenever possible, EPA has decided to make the following changes:

- Return to the Temperature settings of 20°C ± 5°C provided in the Draft 2.5 (Version 4.0) specification; and
- Widen the allowable range of Humidity to 30 – 80 %.

II. Comments Summary

In the interest of an open and collaborative specification development process, the remainder of this document is dedicated to providing all stakeholder comments as well as EPA's responses to them.

Approaches to Measuring On Mode/Active Power

Comment: It would be more appropriate to use screen area as the main determinant for On Mode/Active Power as opposed to number of pixels.

Response: As background, EPA arrived at the pixels per watt approach after completing significant product testing and conducting many detailed conversations with manufacturer representatives. Below are the key benefits of this approach:

- It is technology neutral (i.e., it avoids the difference between viewable screen size versus total screen size);
- It emphasizes display quality over physical screen size; and
- It avoids the need to estimate a representative "duty cycle" for monitors, which would be difficult to do.

Regardless, EPA recognizes that pixels per watt may not be the perfect approach and that resolution is not the only driver of power consumption. While screen size was considered in the early stages, it was not pursued for two reasons: 1) it added a lot more complexity to the specification, and 2) initial testing showed that power variations tended to reflect differences in resolution. Please note that the specification and test methodology do not allow manufacturers to choose the resolution under which they qualify their models; rather, Section 4.D stipulates the resolution for CRTs and LCDs (i.e., highest resolution intended to be driven at 75 Hz for CRTs and native resolution for LCDs). Looking forward, EPA may consider future revisions to the On Mode specification/methodology based on additional data collected as the specification is implemented in the United States and around the world.

Accounting for Components in On Mode/Active Power Specifications

Comment: The On Mode criteria do not take additional components into account that are relevant for certain product/market segments, such as audio amplifiers or USB hubs.

Response: During this specification revision process, 270 computer monitors varying in terms of brand, size, resolution, and features were tested/evaluated by EPA or tested by manufacturers with the data submitted voluntarily to EPA. As such, EPA believes that Draft 3 of the computer monitor specification adequately addresses additional components, such as audio amplifiers and USB hubs. Further, the Test Methodology (Section 4.C) seeks to minimize the power use of components during testing through the following language:

> "No external devices shall be connected to any included Universal Serial Bus (USB) hubs or ports. Any built-in speakers, TV tuners, etc. may be placed in their minimum power configuration, as adjustable by the user, to minimize power use not associated with the display itself. Circuit removal or other actions not under user control may not be taken to minimize power use."

Eliminating CRT Monitors Under Tier 2

Comment: Tier 2 specifications will eliminate almost all CRT monitors from the ENERGY STAR program.

Response: The Computer Monitor specification is designed to be a performance-based specification. This means that it strives to recognize the better performing monitors in terms of energy efficiency without differentiating based on technology. Widely-available projections by market research firms and other industry sources indicate: 1) the continued rapid decline in CRT sales, and 2) decreases in LCD sticker prices. For example, iSuppli/Stanford Resources predicts that in the fourth quarter of 2004 LCD monitors will account for 81.7% of monitor production for North America. Further, according to NPD Techworld, LCD unit sales exceeded CRT unit sales for the first time in May 2003. However, due to price differences and/or other performance factors, CRTs continue to be preferred options for some consumers, even though on average they tend to

consume more energy than a comparable LCD. To remain technology neutral and in recognition of varied consumer preferences, EPA chose its proposed energy efficiency levels in order to allow 17% of CRTs to qualify under Tier 1. For Tier 2, which doesn't take effect until 2006, manufacturers have two years to transition to the lower ENERGY STAR levels and design more energy-efficient CRTs.

Tier 2 On Mode/Active Power Equation (Section 3)

Comment 1: The 20% reduction for XGA models is especially difficult to achieve for 15" LCD models right now, but may be achievable in two years.

Response 1: Prior to reducing the maximum allowable power consumption level for computer monitor models at less than 1 megapixel, EPA did a careful analysis of the models in its current data set. Almost two years prior to the Tier 2 specification taking effect, there are already several 15" LCD models from different manufacturers that meet the specification. Based on currently available information, EPA feels that the specification is both set at realistic levels and appropriately timed, but will continue to monitor the marketplace as the Tier 2 effective date nears.

Comment 2: There is concern about (1) what may be an excessive (40%) jump in the allowable energy use for computer monitors greater than 1 megapixel, as opposed to those under 1 Megapixel, and (2) the arbitrary way in which new limits appear to have been established for computer monitor models under 1 megapixel.

Response 2: In response to Draft 2.5, several stakeholders provided input to EPA to revise the energy-efficiency level for computer monitor models at less than 1 megapixel. Upon receiving this feedback, EPA did a further analysis of its data-set and realized it could revise its equation for computer monitors at less than 1 megapixel while still allowing 17% of those models (or 8 out of a total 47, for which EPA has data on all three operating modes) to qualify for ENERGY STAR in All Modes. However, similar changes for monitors greater than 1 megapixel were not pursued because of the growing trend towards larger screen sizes and the higher power requirements of these monitors. While EPA recognizes that this change created a step or "jump" between less than 1 megapixel and greater than 1 megapixel, it feels that the specification reflects the marketplace and accommodates varying stakeholder comments and issues. Finally, for clarity, EPA did not raise the allowable energy use for computer monitors greater than 1 megapixel by 40%; rather, it lowered the less than 1 megapixel specification by 5 watts or 18%.

When developing Draft 3, EPA consulted with the Information Technology Industry (ITI) Council directly, and requested that ITI then consult with its members. One of the main points of discussion with ITI was the revised Tier 2 equation for computer monitors models under 1 megapixel. EPA presented this revised equation to ITI, along with information on the models in EPA's current data set that already meet this revised equation. ITI was then given the opportunity to discuss this revised equation with its members, and provide feedback to EPA. Further, following distribution of the Draft 3 (Version 4.0) specification, industry was given four weeks to provide comments to EPA on the document. Given that stakeholders had several opportunities to provide feedback on the revised Tier 2 equation, EPA does not believe that the new limits were set in an arbitrary fashion.

Wide Screen Format Models (Section 3)

Comment: A specification for wide screen models is still desired, but it is understood that purchasers of these products may not currently be very concerned with energy savings.

Response: Under Tiers 1 and 2 of the final specification, widescreen models may qualify as

ENERGY STAR if they meet the energy-efficiency requirements. EPA's data analysis has shown that some currently available widescreen models will qualify as ENERGY STAR under the Tier 1 specification, and hence a separate widescreen specification is not required. However, given the relatively recent introduction of widescreen models and the lack of significant energy consumption data available for them, EPA did not have the data to properly evaluate widescreen models relative to the Tier 2 specification. If needed, further evaluation of Tier 2 and widescreens may be conducted at a later date, if widescreen models garner additional market share as forecasted.

Measuring Off Mode/Standby Power (Section 4)

Comment: Previous Drafts allowed use of the "hard off" switch when measuring power consumption in Off Mode. Power measurements in Off Mode should still include use of a "hard off" switch, when this is an option, because these models present the greatest opportunity for savings.

Response: EPA recognizes that the greatest Off Mode power savings are achieved using the "hard off" switch, and applauds those manufacturers that incorporate a "hard off" switch into their product designs. Where this is the only switch, manufacturers may test and report Off Mode power consumption after pressing the "hard off" switch. However, many computer monitor models on the market today only incorporate a "soft off" switch or both types of switches. Where both "hard" and "soft off" switches exist, EPA prefers to require manufacturers to test and report Off Mode power consumption after pressing the "soft off" switch. This approach is preferred for the following reasons:

- No data exists, to EPA's knowledge, indicating whether consumers generally choose to use the "hard off" or the "soft off" switch, when given the choice. Further, at least in some markets, consumer education about the types of switches and their benefits is very limited, making it difficult for the consumer to make an informed decision.
- The computer monitor models in EPA's current data set, which includes data voluntarily submitted by manufacturers, were tested using a "soft off" switch, where available.
- ENERGY STAR Off Mode levels for the Version 4.0 specification reflect the use of a "soft off" switch (i.e., the level is not set at 0 watts).

Refresh Rates (Section 4)

Comment: A refresh rate of 85 Hz should be added to the Test Methodology.

Response: In late 2002 and early 2003, many comments were received on whether there should be different refresh rates for LCDs and CRTs, to accommodate differences in technology. In February 2003, EPA released its integrated computer monitor test methodology along with a summary of the methodology development process. The methodology states that LCDs should be measured at a refresh rate of 60 Hz, unless a different refresh rate is specifically recommended by the manufacturer in product literature, in which case that rate should be used. For CRTs, there were several comments received about whether they should be measured at 85 Hz (consistent with TCO '99 requirements and the general practice in Europe), 75 Hz (the long-time norm in North America), or 77 Hz (an attempt at a compromise that didn't receive favorable feedback, as it was considered an artificial setting that may increase power use). Eventually, 75 Hz was selected by EPA and is reflected in the current computer monitor test methodology. While 85 Hz is better for ergonomic reasons, EPA felt 75 Hz was most appropriate for power measurement purposes, and more importantly, provides a level playing field as manufacturers are all testing under the same conditions.

Partnership Agreement: Labeling

Comment: Partnership agreement requirements for labeling of products, packaging, and Internet sites are burdensome.

Response: The inclusion of the ENERGY STAR label is intended to be a value-added benefit for manufacturers. It provides objective third-party credibility for partners, since products that earn the ENERGY STAR must meet strict energy-efficiency guidelines set by the EPA. ENERGY STAR also offers the attributes of a strong ingredient brand for its partners, since it is an immediate point of differentiation, has added value (energy and financial savings), and has reduced effort and perceived risk for consumers. Including the ENERGY STAR label on product packaging, literature, manufacturer's Internet site, and the physical product is the only way that retailers and distributors are able to identify an ENERGY STAR qualified product and encourage consumers to consider this feature when making their final purchasing decisions. To date, all ENERGY STAR product categories—except Office Equipment—have been fully transitioned to the Partnership Agreement with its labeling requirements. These partners have committed to labeling and, in some cases, have been doing so for a few years.

Of note, to reduce any burden on monitor manufacturers, EPA has given its manufacturing partners additional time, until January 2006, to implement the labeling requirements. This date was specifically selected to coincide with the Tier 2 effective date and the anticipated adoption of the new ENERGY STAR label by the European Commission.